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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,388	07/26/2001	Paul M. Ingram JR.	064747.0940	9981

7590

06/06/2005

Harold E. Meier
Baker Botts L.L.P.
Suite 600
2001 Ross Avenue
Dallas, TX 75201-2980

EXAMINER

JONES, HUGH M

ART UNIT

PAPER NUMBER

2128

DATE MAILED: 06/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,388

Applicant(s)

INGRAM ET AL.

Examiner

Hugh Jones

Art Unit

2128

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE ____ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/4/2002; 4/3/2002</u> . | 6) <input type="checkbox"/> Other: ____ |

RD

DETAILED ACTION

1. Claims 1-21 of US Application 09/917,388, filed 7/26/2001, are presented for examination.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Borel (1997) in view of Khan et al. (1991) and in further view of Gillespie et al. (1998).

5. Borel discloses ISSTES (entire document) including retrieving land surface temperature and emissivity from airborne/spaceborne hyperspectral thermal infrared data (see section 3.2). Section 3.2 discloses obtaining emissivity and temperature from radiances. Note page 4 which discloses that the emissivity with the smallest standard deviation is the smoothest emissivity.

Art Unit: 2128

6. Borel assumes a perfect sensor without error and so does not disclose the error corrections.

7. Khan et al. disclose error analysis including second order analysis (sections (II-A and B)). Section III discloses iterative computer simulation and calculation of temperature and emissivity using both linear and non-linear least-square techniques.

8. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Borel with Khan et al. to obtain the claimed invention because Khan et al. disclose (last paragraph, page 406) that the errors due to measurement may be accounted for.

9. Borel further does not disclose the use of Monte Carlo techniques.

10. Gillespie et al. disclose the use of Monte Carlo techniques for measurement error analysis and their equivalence to regression techniques, in the same context. See section V.A. (Numerical Simulation Results).

11. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Borel with Gillespie et al. to obtain the claimed invention because the algorithm is "...designed to minimize systematic errors in temperature and emissivity," (Page 1125, second column section VI, first sentence.).

12. As per Claims 14, 17, the applied prior art does not expressly disclose that the random noise is no more than 1 or 5.

13. At the time of the invention, it would have been an obvious matter of design choice to a person of ordinary skill in the art to use such a ratio because

Art Unit: 2128

Applicant has not disclosed that the particular number provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with such a number because the choice of scaling depends on the particular problem to be solved and such a scaling would not affect the design disclosed in Huang et al..

14. Therefore, it would have been an obvious matter of design choice to modify Borel (1997) in view of Khan et al. (1991) and in further view of Gillespie et al. (1998) to obtain the invention as specified in claim 14, 17.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- Cohen (US Patent 6,161,075) discloses a method of estimating expected errors of environmental data parameters based on radiance measurements obtained from visible infra red radiometric satellite sensors (VIIRS) orbiting the earth, comprising the steps of: obtaining N radiance measurements of a surface body $I_{sub.1}, \dots, I_{sub.N}$ defining matrix I depending on p unknown surface and atmospheric parameters $T_{sub.1}, \dots, T_{sub.p}$, defining a matrix T; generating a forward model $I=f(T)$ for obtaining the I radiance measurements from the p parameters; choosing an initial set of values for the p parameters and linearizing $f(T)$ about the initial values to obtain a linearized forward $I=s+H.\theta$. as $f_{sub.i}$

Art Unit: 2128

$(T_{sub.01}, T_{sub.02}, \dots T_{sub.0p}) + \text{SIGMA} \cdot H_{sub.ij} \cdot \theta_{sub.j}$ where $i=1, 2, \dots$
 N and $\theta_{sub.j} = T_{sub.0j}$ and $H_{sub.ij} = \Delta f_{sub.i} / \Delta T_{sub.j}$ and where
 θ is a column matrix $\theta_{sub.1}, \dots \theta_{sub.p}$ and H is a matrix of
 $H_{sub.ij}$ values; adding measurement noise vector w of noise values to the
 forward model; determining the covariance of the measurement noise w to obtain
 a covariance matrix C ; and manipulating the matrices H and C according to the
 equation $C_{sub.EDR} = (H^T C^{-1} H)^{-1}$ to obtain matrix element
 $C_{sub.EDR}$ indicative of the expected errors in the values of $T_{sub.1}, \dots T_{sub.p}$
 parameters. See

17. Any inquiry concerning this communication or earlier communications from the examiner should be:

directed to:

Dr. Hugh Jones telephone number (571) 272-3781, Monday-Thursday
 0830 to 0700 ET,

or

the examiner's supervisor, Jean Homere, telephone number (571) 272-
 3780.

Any inquiry of a general nature or relating to the status of this application
 should be directed to the Group receptionist, telephone number (703) 305-
 3900.

mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

Art Unit: 2128


(703) 308-9051 (for formal communications intended for entry) *or*

(703) 308-1396 (for informal or draft communications, please label
PROPOSED or *DRAFT*).

Dr. Hugh Jones

Primary Patent Examiner

May 27, 2005


HUGH JONES Ph.D.
PRIMARY PATENT EXAMINER
TECHNOLOGY CENTER 2100